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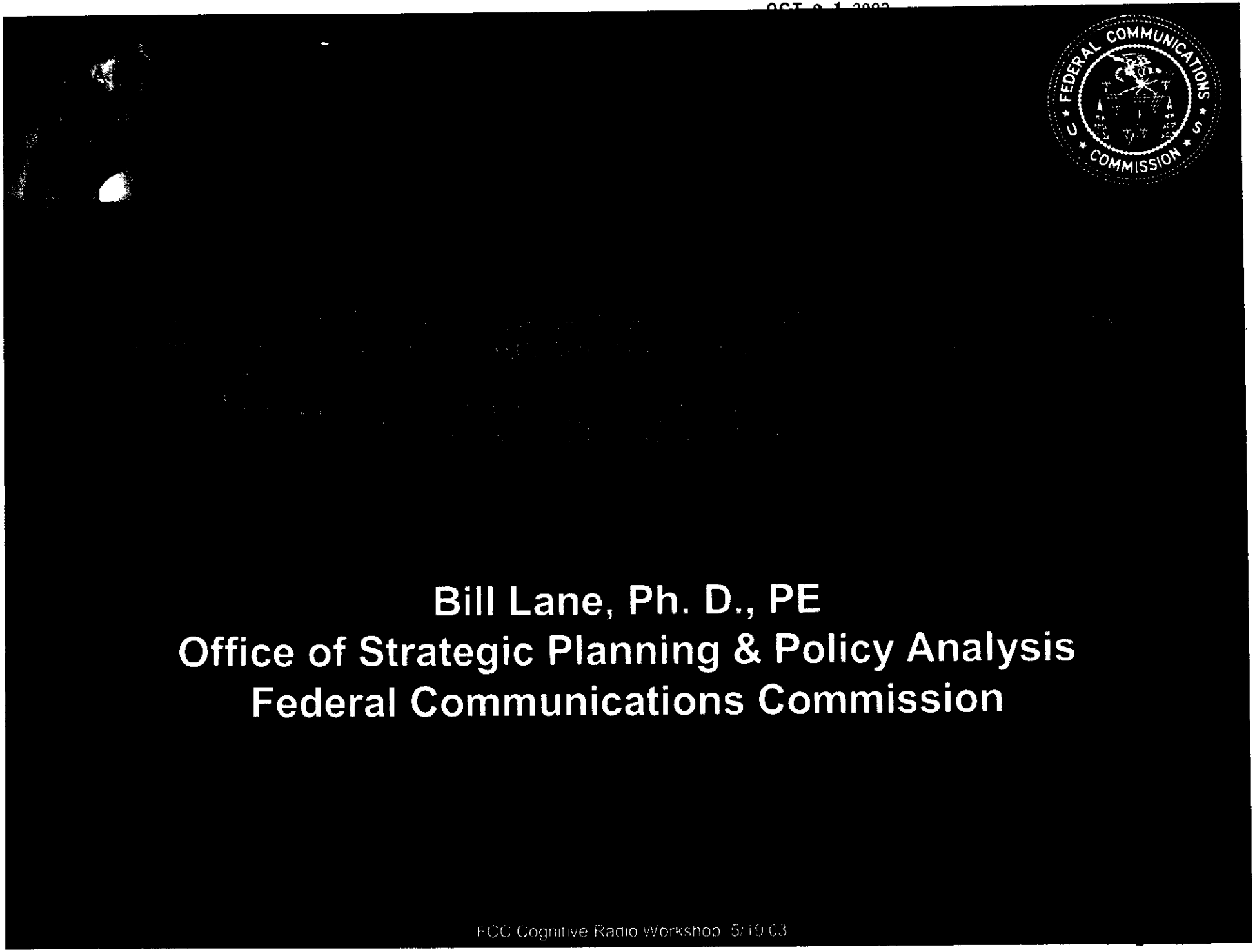

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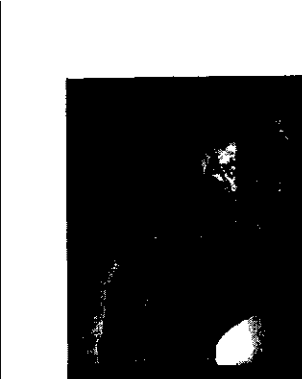
Federal Communications Commission

FCC Cognitive Radio Workshop 5/19/03



- SPTF
- Unlicensed Uses
- Secondary Markets

- While the SPTF Report found continued demand for more spectrum; considerable spectrum is available when both space and time are considered
  - Hence SPECTRUM ACCESS is a major issue
- Report also found that in view of recent impact of Wi-Fi and other unlicensed systems, there is great interest in more spectrum where unlicensed access is facilitated

- In DEC '02 FCC adopted an NOI in Docket 02-380 exploring unlicensed sharing of spectrum in TV bands below 900 MHz
- Interference could be avoided by:
  - Geographical separation and check of license database, *or*
  - Listen-before-talk algorithms

- There is a relationship between the sensitivity of the listen-before-talk detector, the allowed transmit power, and the probability of interference

  (Although there has been little published in this area)

- FCC 2/12/03 tutorial by John Betz, MITRE Corp., explored "feature detectors"

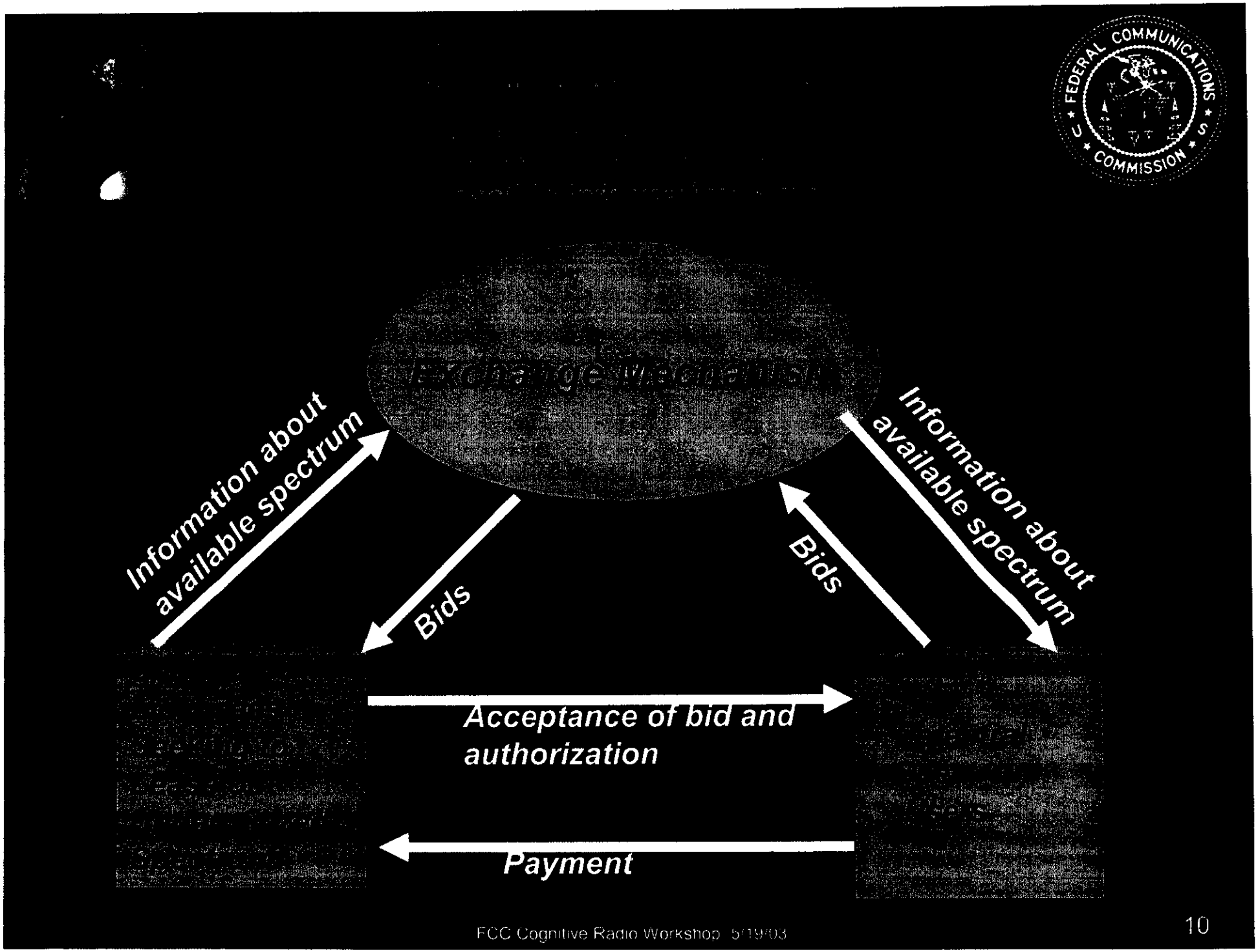
  - sensitive listen-before-talk detectors that are little known in commercial circles

Can cognitive radio technology be used to improve unlicensed spectrum access while also avoiding harmful interference?

- In Docket 00-230, FCC is considering both short term and long term leasing of spectrum by licensees without case-by-case FCC approval
- Seen as possible method to improve spectrum efficiency by giving economic incentives to licensees to allow more intensive use

- Multiyear leases could be done with conventional technology
  - lessee just builds new system(s) using leased spectrum
- Leases in the hours/minutes/seconds range are the subject of today's discussion

- In the electric power industry there is an hour-to-hour market for power exchange
- Should we remove any barriers to such a market in the commercial spectrum area?
- Such a market might require:
  - An exchange mechanism to bring buyers and sellers together
  - A standard definition for what is being bought and sold
  - A real time spectrum management monitor to insure compliance


Exchange/Marketplace
Information about available spectrum
Bids
Bids
Information about available spectrum
Acceptance of bid and authorization
Payment

Cognitive radios and dynamically reconfigurable software radios could provide a means to implement such a spectrum commodity market

- Is a near real time secondary market practical and/or desirable?

What present FCC rules and policies inhibit the development of such approaches or create uncertainty for developers?

Should FCC have a role in defining standard interfaces for spectrum information flow and spectrum exchange?

We look forward to your views on how we should address these issues!